

	F 460 Ex / F 460-1 Ex	Brushless FBM 4000 Ex	Compressed-air F 416 Ex	Three-phase F 414
	<p>The ex-protected commutator motor F 460 Ex is a compact commutator motor, with extremely tough double skin aluminium housing and is thus very quiet. The motor is completely enclosed. Optimal air flow ensures very good cooling and thus extended service life of the carbon brushes.</p>	<p>The world's first brushless drum pump motor FBM 4000 Ex is a brushless drum pump motor, with extremely tough double skin aluminium housing and is thus very quiet. Soft-start and easy to handle speed control allow sensitive dosing. It is low-wear and maintenance-free.</p>	<p>The lightweight and easy to handle compressed-air motor Compressed-air motor F 416 Ex is very light and easy to handle and at the same time extremely powerful. Thanks to a silencer it is very quiet. Alternatively an exhaust hose can be used to guide the exhaust air to an oil separator. The speed is simply adjusted by varying the operating pressure or the amount of air.</p>	<p>Three-phase motor for extreme operating conditions With robust three-phase gearmotor F 414 an increased duty cycle is possible, so it can be used in extreme conditions. It convinces with a constant speed.</p>
	IP 55/S1	IP 55/S1	-/-	IP 55/S1
				-
	External	External	Compressed-air	External
	12/24; 42/110/120/230/240 V DC; 50 - 60 Hz	230 V 50 - 60 Hz	87 PSI (6 bar) (17 SCFM air consumption)	230/400 V 60 Hz
	12 V: 230/24 V: 410/460/700	600	470	550/750/1100
	Optional	Infinitely	Optional	-
	11.2/13 lbs (5.1/5.9 kg)	13.6 lbs (6.2 kg)	1.9 - 3 lbs (0.9 - 1.4 kg)	19.4 - 28.2 lbs (8.8 - 12.8 kg)
	Optional	Yes	-	-
	<ul style="list-style-type: none"> ▶ Commutator motor ▶ Very robust housing in aluminium ▶ Motor is completely closed ▶ F 460 Ex: 460 Watt ▶ F 460-1 Ex: 700 Watt ▶ F 460 Ex EL: 460 Watt, with infinite speed adjustment 	<ul style="list-style-type: none"> ▶ Brushless motor ▶ Increased run times ▶ Very low wear ▶ Maintenance-free ▶ Low life cycle costs ▶ With infinite speed adjustment ▶ Very low noise level ▶ Extremely tough double skin aluminium housing 	<ul style="list-style-type: none"> ▶ Compressed-air motor ▶ Very lightweight and easy to handle ▶ Extremely powerful ▶ Highest power of all drum pump motors ▶ F 416 Ex: with trigger valve ▶ F 416-1 Ex: without valve ▶ F 416-2 Ex: with ball valve 	<ul style="list-style-type: none"> ▶ Three-phase gearmotor ▶ Increased duty cycle possible ▶ The most powerful electric drum pump motor ▶ Available with motor protection switch or cable terminal box ▶ Constant speed

Note on motor power and undervoltage protection











Electrical power consumed is stated for electric motors, for a compressed-air motor, the output power is stated.

The compressed-air motor F 416 Ex (470 W) is more powerful than the commutator motor F 457 (800 W).

Undervoltage protection prevents the motor from starting unintentionally after a power failure. The motor must then be started manually. Motors with undervoltage protection are therefore not suitable for operation with switching amplifiers such as in semi-automatic filling systems (cf. page 36-37).

Overview of series 400 pump types

Quick and easy to select the right pump for your requirement

Pump type	For standard applications (vertical)		For special applications (vertical)		
	F/FP 430	F/FP 424	F/FP 425	F 426	
Description	With mechanical seal	In the liquid area sealless	For 99.98 % drum emptying	For mixing and/or pumping	
					
Versions also in	  				
Typical application areas	Can be used universally, ideal for frequent medium changes	Can be used universally, especially for fast flowing media	Can be used universally, for almost complete emptying and for expensive fluids	Can be used universally, especially with inhomogeneous media	
Seal type	With mechanical seal	Sealless In the liquid area	With mechanical seal	With mechanical seal	
Materials pump	Stainless steel, polypropylene, polyvinylidene fluoride, aluminium, Hastelloy C	Stainless steel, polypropylene, polyvinylidene fluoride	Stainless steel, polypropylene, Hastelloy C	Stainless steel, polypropylene	
Standard immersion depth	27/39/47 inches 700/1000/1200 mm	27/39/47 inches 700/1000/1200 mm	27/39/47 inches 700/1000/1200 mm	39/47 inches 1000/1200 mm	
Other immersion depths/special lengths	7 - 118 inches 200 - 3000 mm	7 - 78 inches 200 - 2000 mm	19 - 78 inches 500 - 2000 mm	19 - 78 inches 500 - 2000 mm	
Flow rate max.*	63 GPM*	63 GPM*	31 GPM*	63 GPM*	
Delivery head max.*	98 ft*	98 ft*	85 ft*	42 ft*	
Viscosity max.*	1200 cPs*	1200 cPs*	1200 cPs*	1200 cPs*	
Advantages	<ul style="list-style-type: none"> ▶ Ideal for frequent medium changes, hardening media, fast drying media, crystallizing media ▶ Can be taken apart into main components easily and quickly for cleaning ▶ Compared to sealless pump higher service life on abrasive media ▶ High stability of the plastic pumps enables immersion lengths of up to 118 in (3000 mm) 	<ul style="list-style-type: none"> ▶ No seal wear ▶ Optimal emptying of the inner tube ▶ High service life ▶ Low wear of guide bearing and shaft ▶ Long bearing life ▶ Particularly suited for hydrochloric acid and chromic acid ▶ Stainless steel version for use in hazardous areas ▶ Versions for use with AdBlue® also available 	<ul style="list-style-type: none"> ▶ Optimal residual emptying with e.g. less than 0.05 l residual amount left in 200 l drum ▶ No tilting to totally empty the drum ▶ Reduction of cleaning and waste disposal costs ▶ No loss of medium when taking the pump from drum to drum ▶ Optimal use of expensive fluids 	<ul style="list-style-type: none"> ▶ 3 operating modes in one pump: <ul style="list-style-type: none"> - Conveying - Conveying with simultaneous mixing - Mixing operation only ▶ Switching operating modes is possible even while operating ▶ Easy to dismantle for cleaning ▶ Distinct feature, only at FLUX: The inner tube is reinforced with a metal core on the PP model 	
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* dependent on pump model, motor and medium